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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,597	02/25/2005	Nevio Benvenuto	IT02 0025 US	3611
65913	7590	01/10/2008		
NXP, B.V. NXP INTELLECTUAL PROPERTY DEPARTMENT M/S41-SJ 1109 MCKAY DRIVE SAN JOSE, CA 95131			EXAMINER NEFF, MICHAEL R	
			ART UNIT 2611	PAPER NUMBER
			NOTIFICATION DATE 01/10/2008	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary

Application No.

10/525,597

Applicant(s)

BENVENUTO ET AL.

Examiner

Michael R. Neff

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 13-16 and 29-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 17-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/25/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because it is longer than 150 words.

Correction is required. See MPEP § 608.01(b).

3. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.

- (1) Field of the Invention.
- (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

4. The disclosure is objected to because of the following informalities: There are no section headings or numbering of sections within the specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 1-10 & 18-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Berberidis et al. (herein after Berberidis) (US Patent 6,052,702, see IDS).**

Re Claims 1 and 18, Berberidis discloses a frequency-domain decision feedback equalizer device for single carrier modulation, preferably for use in a broadband communication system, including a first section comprising: a fast Fourier transforming

means (11) for performing a fast Fourier transformation on a first vector of signals (M, output from 10) inputted into said first section, and outputting a second vector of signals (2M), a feed forward equalization means for performing a feed forward equalization by multiplying each of the components of said second vector of signals with equalization parameters (12 and the associated inputs to element 12), and outputting a third vector of signals (output from element 12), and an inverse fast Fourier transforming means (13) for performing an inverse fast Fourier transformation on said third vector of signals, and outputting a fourth vector of signals (M, output from 13); and a second section comprising: a feedback filter means for performing a linear filtering of a signal derived from an output signal of said second section (FB, and elements inclusive of it), an adding means (14) for adding the output signal of said feedback filter means to the output signal of said first section, and a detector means (DO) for receiving the output signal of said adding means and generating said output signal of said second section by extracting samples from the output signal of said adding means (Col. 5 line 59-Col. 6 line 49; Figure 1 and 4).

Re Claims 2 and 19, Berberidis discloses the device according to claims 1 and 18, wherein said feed forward equalization means is provided for generating equalization parameters adapted for minimizing the signal-to-noise ratio of the signal processed in the frequency-domain decision feedback equalizer device, preferably in the output signal of said first section (FF, Col. 2 line 66-Col. 3 line 4; Col. 7 lines 42-55).

Re Claims 3 and 20, Berberidis discloses the device according to claims 1 and 18, wherein said feed forward equalization means is provided for generating equalization parameters by taking into account a fast Fourier transformation estimation of a channel impulse response of the signal processed in the frequency-domain decision feedback equalizer device, preferably in the output signal of said first section (FF, output from 11; Col. 5 line 64-Col. 6 line 8).

Re Claims 4 and 21, Berberidis discloses the device according to claims 1 and 18, wherein said first section further comprises: a serial to parallel converting means for converting a sequence of signals inputted into said first section to said first vector of signals (10), and a parallel to serial converting means for converting said fourth vector of signals to a sequence of output signals of said first section (the M/PL element provides the ability to convert from parallel to serial; Col. 5 line 59-Col. 6 line 49).

Re Claims 5 and 22, Berberidis discloses the device according to claims 4 and 21, wherein said serial to parallel converting means is adapted to receive scalar signals (1, 10, $x(n)$; Col. 1 lines 31-44; Col. 2 lines 38-65; Col. 5 line 59-Col. 6 line 8).

Re Claims 6 and 23, Berberidis discloses the device according to claims 4 and 21, wherein said signal to parallel converting means is provided to generate said first vector of signals including blocks of a predetermined number (P) of consecutive samples of the signals inputted into said first section (Col. 5 lines 60-67).

Re Claims 7 and 24, Berberidis discloses the device according to claims 4 and 21, wherein said parallel to serial converting means and said feedback filter means are provided to output scalar signals (M/PL , $y(n)$; Col. 2 lines 38-65, Col. 6 line 35-Col. 7 line 37).

Re Claims 8 and 25, Berberidis discloses the device according to claims 6 and 23, wherein said parallel to serial converting means is provided to output a scalar signal (Y) which is constituted by consecutive blocks of a predetermined number (M) of samples, each block being built with the predetermined number (M) of samples of each block of said fourth vector of signals (Col. 5 line 59-Col. 6 line 63).

Re Claims 9 and 26, Berberidis discloses the device according to claims 1 and 18, wherein said detector means is adapted to receive and output discrete time signals (Col. 1 lines 5-67, Col. 6 line 64-Col. 7 line 37; Claim 3).

Re Claims 10 and 27, Berberidis discloses the device according to claims 1 and 18, wherein said detector means is provided to generate said output signal (DO , $y(n)$; Col. 5 line 59-Col. 6 line 63).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. **Claims 11 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berberidis in view of Johnson et al. (herein after Johnson) (US Patent 5,808,574).**

Re Claims 11 and 28, Berberidis discloses the device according to claims 1 and 18, wherein said second section further comprises a feedback input generator means for receiving said output signal of said second section and providing an output signal which is built by consecutive blocks, each block comprising a predetermined number (M) of samples from said output signal of said section, to said feedback filter means (Col. 5 line 59-Col. 6 line 63); however Berberidis fails to explicitly disclose wherein each block is also including a pseudo noise sequence.

This design is however disclosed by Johnson. Johnson discloses a feedback system within a communication system wherein the signals within the feedback loop are adjusted to include a pseudo noise sequence (Col. 45 lines 29-43).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the feedback equalizer disclosure of Berberidis to insert pseudo noise into the feedback signal as disclosed by Johnson in order to gain the benefit of improving on system performance and symbol detection.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berberidis in view of Gay-Bellile et al. (herein after Gay) (US Publication 2002/0070796 A1).

Re Claim 12, Berberidis discloses, wherein said receiver includes a frequency-domain decision feedback equalizer device according to claim 1 (see rejection for claim 1 above); however Berberidis fails to explicitly disclose using a single carrier modulation within the equalizer.

However this system design is disclosed by Gay. Gay discloses a feedback equalizer device wherein single carrier modulation is used (Paragraphs 0016, 20, 24-26).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of single carrier modulation within the feedback equalizer system as disclosed by Gay with the feedback equalizer disclosure

of Berberidis in order to gain the benefit of having a system that can perform with lower power consumption than that of a system using multi-carrier modulation.

11. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berberidis and Gay in view of Thomas et al. (herein after Thomas) (US Publication 2004/0013084 A1).

Re Claim 17, Berberidis discloses a communication system including a transmitter for transmitting data, comprising a modulating means for organizing the data in blocks a receiver of a communication system, wherein said receiver includes a frequency-domain decision feedback equalizer device according to claim 1 (see rejection of claim 1 above); however Berberidis fails to explicitly disclose wherein (1) the communication system is using a single carrier modulation, and although the use of a header on a data signal is well known to those of ordinary skill in the art, Berberidis does not explicitly disclose (2) wherein each block is separated by a sequence of a predetermined signal.

Regarding item (1) above, this system design is disclosed by Gay. Gay discloses a feedback equalizer device wherein single carrier modulation is used (Paragraphs0016, 20, 24-26).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the use of single carrier modulation within the feedback equalizer system as disclosed by Gay with the feedback equalizer disclosure

of Berberidis in order to gain the benefit of having a system that can perform with lower power consumption than that of a system using multi-carrier modulation.

Regarding item (2) above, separating each data block by a sequence of a predetermined signal, or a signal header, is explicitly disclosed by Thomas (Fig. 1-5).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate separating the data symbol blocks by a predetermined header symbol as disclosed by Thomas with the feedback equalizer as disclosed by Berberidis in order to gain the benefit of improved symbol recognition and demodulating within the receiver end of the communication system.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael R. Neff whose telephone number is (571) 270-1848. The examiner can normally be reached on Monday - Friday 8:00am - 4:30pm EST ALT Fridays.

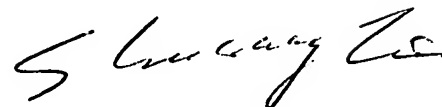
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571)272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:
10/525,597
Art Unit: 2611

Page 11

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